FLEETMAPPING

CHECKLIST

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INTRODUCTION

The information contained in this document was developed by the Fleetmapping Subcommittee to provide you with information to enable your jurisdiction to begin the process of Fleetmapping. The steps outlined in this document deal with the information gathering that needs to be accomplished prior to starting the process.

The Fleetmapping process takes a long time to complete, is fairly confusing, and requires intense attention to detail. The best approach is to break the entire process into manageable phases. This is Phase I. As you begin the information collection process, you will need to identify one or two individuals who will be responsible for seeing that the work is completed and probably nagging everyone else to provide the requested information. Keep in mind that information on every radio user, radio and frequency in your jurisdiction will need to be collected. As you collect the information in this Phase, the subcommittee will be working on developing the information necessary to complete the next phase(s).

As a refresher, we have included some limited information on radio terminology as well as a brief technology overview.

Frequency

This is a technical term used to describe a specific radio wave. Radio signals are electromagnetic waves and frequency is the measure of how many waves cross a point in a given time. Often people use frequency to indicate where in the radio spectrum a radio transmits in. Radios do not transmit on a single frequency; they use a part of the spectrum on either side as well. This entire group of frequencies is called the bandwidth.

Channel

Channel is the term used to describe the spectrum used by a radio to transmit and receive. This is the entire bandwidth not just the frequency. In some systems such as duplex repeaters, the channel includes two frequencies with bandwidth. The key point to remember is that channels are what the radio transmission uses. A channel is defined by but not the same as the frequency.

On the new trunked system this means that channels are related to the towers, and the internal workings of the radios, **not** the "Channel Selector" on the radio as with a typical analog radio. The number of channels is limited, even if your radio can have up to 256 positions.

Talkgroup

A talkgroup is often referred to as the electronic equivalent of a channel on a trunked system. This is a good definition for the basic user if the system is only trunked. The trunked system allows trunked talkgroups as well as non-trunked (analog and digital) channels.

A talkgroup is an identification of an electronic location where users may communicate to each other. This is very similar to chat rooms on the internet. They have a name and a method to connect, but they have no real existence in space or radio spectrum. They make use of another system controlled by a computer to actually connect the users.

In the trunked radio system this method would be the "Channels" on each tower. So like in a chat room when too many people attempt to use a chat room or several rooms; other users may get a slow response or be not allowed in.

RADIO TECHNOLOGY OVERVIEW

Radio technology is full of confusing terms that come straight from a physics book. Sometimes when you ask a radio engineer a question, you even get an answer that is a formula. The authors of this manual have tried to simplify the terms as much as possible to allow you to get a good handle on the concepts. The goal in this section is not to turn you into radio experts, but, it is hoped that you'll be able to understand the experts a little better when they talk to you.

Trunked System Radios

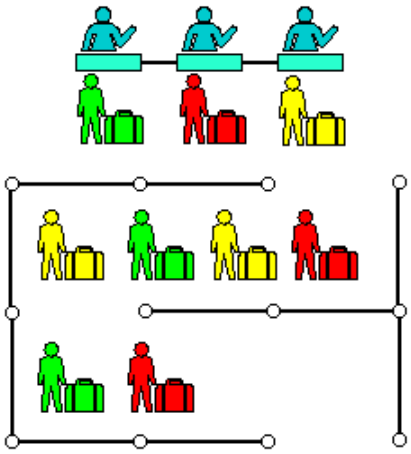
Each trunked radio on Interoperability Montana system is a computer with a receiver and transmitter attached. All traffic on the system is data, or a series of 1's and 0's directed between radios. The computer also allows each radio to have a unique ID that allows the **Master Controller** to identify that radio and which talkgroup is selected on the radio. Each radio is in constant communication with the tower through the **control channel** at the tower site. This control channel passes on such information as surrounding site information and site status. The radio also samples the signal strength or **RSSI** of the control channel and compares it with others that the radio is receiving and at preset levels will switch from one tower to another. This allows the radio to roam between sites without user action.

Each tower is in continuous communications with the **Master Controller**, passing on site status information, user registration information and, of course, the voice traffic. A very important concept that needs to be understood about the system is **Affiliation**. Registration or affiliation occurs when a radio is turned on, when a new talkgroup is selected, or when the radio selects a new site through its RSSI level. When a radio affiliates with a tower, it sends the radio ID and the talkgroup selected to the **Master Controller**. Deregistration occurs when the radio is powered down, or leaves a coverage area.

The user radio equipment can be used on several existing radio system as well as the new state wide system. To understand these radios a little better we will discuss the radio system types that are in use currently.

The basic premise behind trunking in radio systems is to efficiently utilize the radio frequency (rf) spectrum, and allow many users to operate on a few frequencies. Trunking allows the sharing of these resources by having the decision process of which site "repeater" is used left to the system, rather than the user having to select an individual frequency. When a radio user presses their push to talk button, the system assigns a repeater, tells the radio which channel to go to, and passes that traffic to other radios in the system that are selected up on the same talkgroup. We use the term radio "talkgroup" as opposed to radio "channel" for the digital portion of the radio. The radios operating on this system are capable of both digital and analog operation, and the user needs to recognize that a "talkgroup" is an electronic grouping of radio users, whereas a "channel" is frequency related. This is important because an analog "channel" is area specific, where talkgroups can be statewide.

One can relate radio trunking to how a check-in line might work at an airport. There is a counter (tower) with three ticket agents (3 repeaters), each agent may assist a customer (user radio) as needed and there is a single line of customers. For example, if agents and #1 and #2 are busy, a supervisor (master controller) will designate #3 as the next ticket agent to assist the next customer in line. If #1 and #3 are busy, the supervisor will designate #2 for the next customer. In this way, ticket agents do not stand vacant and the agents are more fully and effectively used.



Two technological breakthroughs have made trunked radio systems possible: 1) the development of microprocessors and personal computers, with their associated software and 2) synthesized frequency generators. Microprocessors allow the logical selection of frequencies for the repeaters. Frequency synthesizers at the repeater and mobile and portable stations allow the radios to set up individual transmitting and receiving frequencies as designated by the base station microprocessor called the "master controller."

The way that sites inform the master controller that there is a need for a repeater is a dedicated data control channel (repeater) at each site which monitors mobiles and handhelds for activity. If a user desires to speak with another user or a group of users, he or she initiates a transmission on the data control channel by pressing the push to talk button, which sends his or her ID number and requests that he or she talk with another user or a group of users. The control channel repeater relays the information to the master controller, which determines which repeaters are available at the site and commands the initiating radio and the target radios to change their operating frequencies to that of the assigned repeater. Typically within 1/4 second, a voice

conversation may then take place. After the conversation, the radios return to monitoring the control channel and the master controller determines that the repeater is now available for other use. Note that these systems are totally software driven.

Analog Radio Systems

Analog radio systems continuously transmit radio waves that are usually modulated by a voice. A typical analog voice radio consists of a transmitter and receiver.

Digital Radio Systems

People do not usually understand digital signals. Our senses are analog oriented and can only respond to continuous signals or impressions. Therefore, we must hear voice transmissions on a loudspeaker or a set of headphones and see visual signals, on either a video monitor or a printer, as words and pictures.

Voice transmissions may be sent over digital radio systems by sampling voice characteristics and then changing the sampled information to ones and zeros to modulate the carrier. This is done using a circuit called a voice coder, or "vocoder." At the receiver, the process is reversed to convert the digital voice samples back into analog voice.

Transmission Differences

Analog and digital radio systems have vastly different transmission characteristics. As you move away from an analog radio transmitting site, the signal quality decreases gradually while noise levels increase. The signal becomes increasingly more difficult to understand until it can no longer be heard as anything other than static. A digital signal has fairly consistent quality as it moves away from the transmitter until it reaches a threshold distance. At this point, the signal quality takes a nose dive and can no longer be

understood. A comparison of the transmission differences between analog and digital signals is shown above.

Duplex (Repeated) Channel Usage

The general purpose of a duplex (repeated) system is to provide communications over a longer distance. The radio signal generally goes though a repeater or network system on a fixed repeater frequency pair. The transmit distance may be extended, as much as 30 miles or more, but can be affected by terrain and other conditions.

Local Repeaters

Each local agency may maintain their local highband repeaters. These highband frequencies may be programmed into the new digital radios.

Simplex (Non-Repeated) Channel Usage

The general purpose of a simplex (non-repeated) is to provide communications over a shorter distance direct handheld to handheld, mobile-to-mobile, or handheld-mobile communications. Generally the transmit distance is less than 2 miles, but maybe longer or shorter depending on terrain and other conditions.

The radio signal generally does not go though any repeater or network system. The transmit and receive frequency are the same. The channel generally is not monitored by any central dispatch system.

These channels are generally used as on scene operations to provide direct communications between the incident commander and various operating branches.

State Fire Mutual Aid Channels – The State of Montana has licensed several Mutual Aid frequencies for use statewide. These channels are commonly referred to as the colored channels because they are assigned a color to designate the actual frequency. For example, Red = 154.070, or Maroon = 154.28. a permit to use these mutual aid fire, law and EMS frequencies must be obtained through the Public Safety Services Bureau.

National and State Law channels – Analog frequency generally known as National Law. This channel is generally used as an on scene operations channel. National Law may be used anywhere in the United States by Law Enforcement officers and dispatch. This channel may be used to communicate with enforcement officers in adjoining states if those officers have this channel selected or if they scan it. The National frequency is commonly referred to ast he Blue Channel (155.475). Under the State's control, there are the Silver (155.79) and Black (153.800) channels.

EMS- Analog frequencies generally known as EMS. These channels are generally used as on scene operations channels and ambulance to hospital communication. They are known as White (155.28), Tan (155.34), Grey (155.325) and Pink (155.385).

Digital Simplex – Would be similar to analog simplex channels as described above except digital.

Mobile Data Subsystem

The system has the capabilities of mobile data traffic. The mobile data terminals and specific software will allow subscriber's access to NCIC, CJIN and other databases necessary in the day to day and emergency operations within the state.

BEGINNING STEPS TO FLEETMAPPING

1. Identify Functional Design Team Members
2. Inventory Radios
3. Inventory Frequencies
4. Identify Departments and Individual Users
5. Identify Who Each Agency Talks To
6. Determine Area of Operation by Department/Agency
7. Determine Button Configuration
8. Determine Surveillance Modes

1. FUNCTIONAL DESIGN TEAM MEMBERS

County Users: ☐ Dispatch ☐ Sheriff ☐ Police ☐ City Fire
☐ Rural Fire ☐ Public Health ☐ County EMS ☐ Private EMS
☐ Schools ☐ Weed ☐ Road
☐ Other_____

State Users: ☐ MPH ☐ MDT ☐ F & W ☐ Livestock
☐ Other_____

Federal Users: ☐ BLM ☐ BIA ☐ USFS ☐ FBI
☐ Border Patrol ☐ US Marshalls
☐ Other_____

Neighbors: ☐ Counties ☐ Tribes ☐ States ☐ Canada

☐ Dispatch	☐ Dispatch
☐ Law	☐ Law
☐ Fire – City	☐ Fire – City
☐ Fire – Rural	☐ Fire – Rural ☐
☐ EMS – County	☐ EMS – County
☐ EMS – Private	☐ EMS – Private
☐ Hospital	☐ Hospital

2. INVENTORY ALL RADIOS

All radios need to be inventoried whether or not they will be used on the trunked system. There are several reasons this is important. First, it will provide you with information about which radios will need to be replaced first. Second, having an inventory of all radios will assist you in developing the plan for bringing users on to the system.

User Name	Manufacturer	Model	Serial Number	Trunking Enabled		Trunking Capable		Encryption Capable		Encryption Enabled	
				Yes	No	Yes	No	Yes	No	Yes	No
Joe Smith	Motorola Example Only	XTS2500	AS3590093	X						X	

3. INVENTORY FREQUENCIES

All radios and frequencies to be used on the trunked system that will be needed to utilize the cross patching feature will be required to use CTSS tones on receiver input to the repeater. If these tones are not used you will hear interference (squelch noise) and if converted to a digital signal could lock up the trunking system. If your agencies present analog system does not employ CTSS/PL/DPL, this feature must be added to the legacy repeaters, base stations, mobiles, and handhelds before they can be activated in the patched mode. Please contact your local radio shop or informed personnel to determine what steps will need to be taken. This action will also vastly improve your legacy communications system as they are presently used.

Site	Licensee	Call Letters	Transmit (Mobile)	Receive (Mobile)	Tones	DAC Codes
Bluff	Sheriff	KLMN123	151.222	153.444	100.0	293

4. IDENTIFY DEPARTMENT AND INDIVIDUAL RADIO USERS

Department	Sub-Department	User Name or License Plate Number or Badge Number	Alias
Sheriff's Office	Administration	Casey Zembrow	See Attached
	Civil	Rogan Willis	See Attached
Example Only	Criminal	Gerard Garcia	See Attached

Montana Highway Patrol Aliases

User	MHP Plate	Radio Model	Alias
Dispatch			Dispatch
Officer 1	MHP-100	Astro XTL 5000	MHP100
Officer 2	MHP-110	Astro Spectra Plus	MHP110
Officer 3	MHP-109	Astro XTL 5000	MHP109
Officer 4	MHP-103	Astro Spectra Plus	MHP103
Officer 5	MHP-148	Astro XTL 5000	MHP148
Officer 6	MHP-219	Astro XTL 5000	MHP219
Officer 7	MHP-181	Astro XTL 5000	MHP181
Officer 8	MHP-225	Astro XTL 5000	MHP225
Officer 9	MHP-280	Astro XTL 5000	MHP280
Officer 10	MHP-216	Astro XTL 5000	MHP216
Officer 11	MHP-264	Astro XTL 5000	MHP264
Officer 12	MHP-329	Astro XTL 5000	MHP329
Officer 13	MHP-271	Astro XTL 5000	MHP271
Officer 14	MHP-192	Astro XTL 5000	MHP192
Officer 15	MHP-244	Astro Spectra Plus	MHP244
Officer 16	MHP-281	Astro Spectra Plus	MHP281
Officer 17	MHP-237	Astro XTL 5000	MHP237
Officer 18	MHP-167	Astro XTL 5000	MHP167
Officer 19	MHP-156	Astro XTL 5000	MHP156
Officer 20	MHP-242	Astro XTL 5000	MHP242
Officer 21	MHP-269	Astro XTL 5000	MHP269
Officer 22	MHP-274	Astro XTL 5000	MHP274
Officer 23	MHP-302	Astro XTL 5000	MHP302
Officer 24	MHP-223	Astro XTL 5000	MHP223
Officer 25	MHP-142	Astro XTL 5000	MHP142
Officer 26	MHP-154	Astro Spectra Plus	MHP154
Officer 27	MHP-R32	Astro Spectra Plus	MHP-R32
Larson,C	MHP-R30	Astro XTL 5000	MHP-R30
Smith R	MHP-R31	Astro XTL 5000	MHP-R31
Osborne	MHP-R33	Astro Spectra Plus	MHP-R33
Baiamonte		XTS 5000	MHP144P
Irwin		XTS 5000	MHP148P
Shop		Astro Spectra Plus	
Tooley	MHP-110	Astro XTL 5000	MHP110
Hamilton	MHP-101	Astro XTL 5000	MHP101

Lewis & Clark County Aliases

Public Works

572579	CW 1579
572092	CW 1092
572639	CW 1639
572301	CW 1301

HELENA FIRE

531234	Bockman
530001	Station1
530002	Station2
532002	HazMat
532129	Engine1
532138	Engine2
532130	Truck1
532128	Chf Jeep
532132	Rescue2
532139	Wldland1
532121	GMC
532136	Jeep
531120	Rescue 1
531301	Hazmat1
531302	Hazmat2
522034	HPD 34
522035	HPD 35
522036	HPD 36

RF 1

552001	AG AMB
552005	AG MOB 1
551010	AG AM2
541001	AG 801
542051	AG CHIEF
542052	AG M2
542053	AG M3
541051	BAX 821
541060	BAX MOB1
541061	BAX MOB2
542078	BAX CHF
542079	BAX CHF2
541101	BRD 661
541110	BRD MOB1
542126	BRD FR1
542128	BRD TN44
542129	BRD TN15
542130	BRD WL2
542131	BRD BR1
542127	BRD ENG1
541151	CC 811
541152	CC 812
542176	CC CHIEF
542177	CC ENG1
542178	CC ENG2
541201	CF 851
541202	CF 852
542252	CF PUMP
542256	CF ENG2
241001	DF Chief
541301	EG 691
541302	EG 692
541310	EG MOB1
541311	EG MOB2
542357	EG COM1
542358	EG COM2

SAR

506401	SAR 1
506402	SAR 2
506403	SAR 3
506400	SAR NS1
506410	M ALLEN
506412	AZEVEDO

EMS

550600	ER ROOM
552655	SPH5A0
552651	SPH5A1
552656	SPH5A2
551661	SPH 301
551662	SPH 302
552001	AG AMB
551010	AG AMB2
551012	AG AMB4
551014	AG AMB6
552301	LN AMB1
552302	LN AMB2

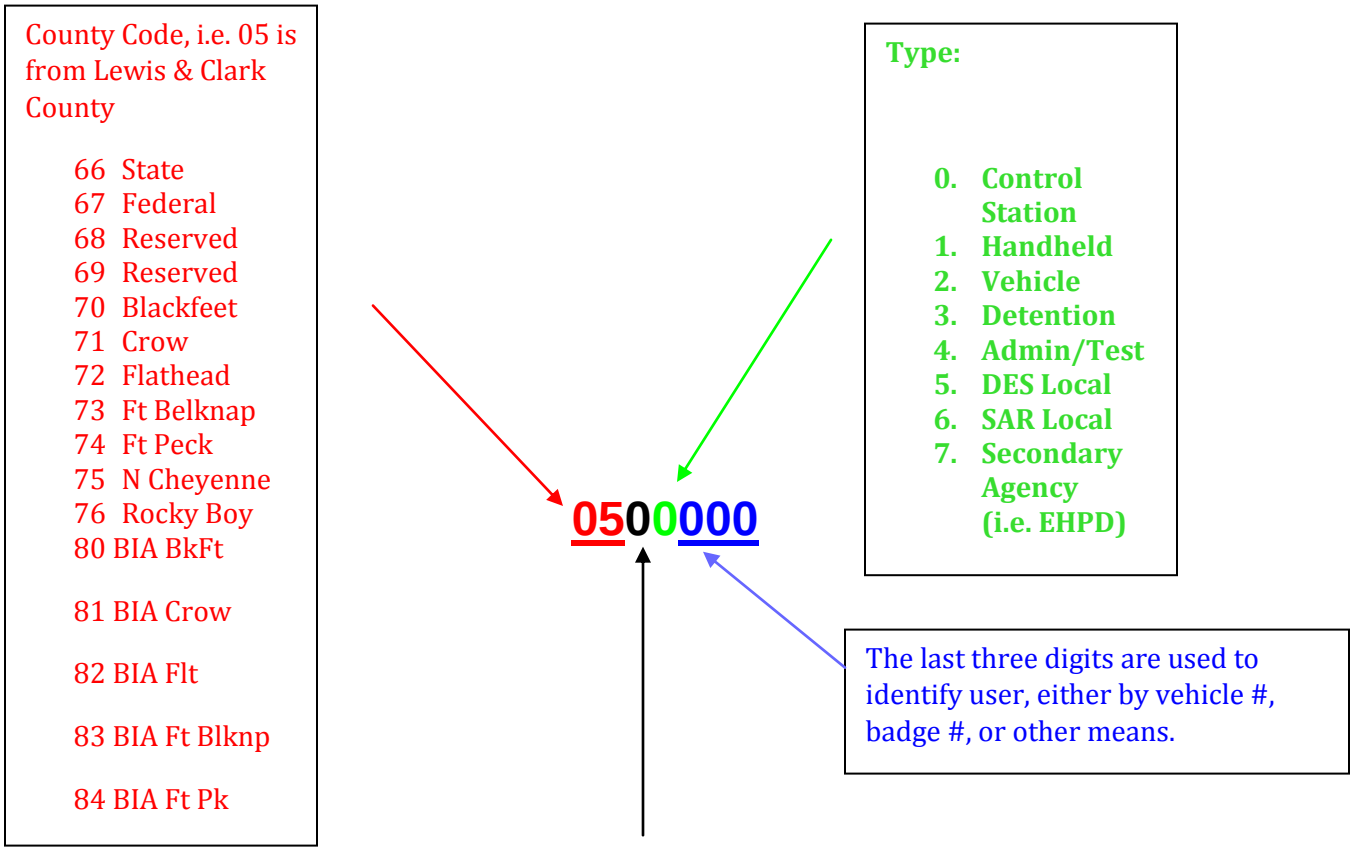
RF ADMIN

541001	AG 801
552001	AG AMB 1
551010	AG MED 1
541051	BAX 821
541101	BRD 661
541151	CC 811
541201	CF 851
541301	EG 691
541752	EHF 622
541252	EV 642
531200	HF 600
541452	LS 682
541402	LC 612
541502	LF 842
551304	LA 002
552301	LC AMB 1
541551	MV 551
541601	WV 631
541652	WC 872
541701	YK 881
552651	SPH 5A1
552655	SPH MOB1
552656	SPH 5A2
552654	SPH 5A4

BW CO

4350001	BW HOSP
431001	BW SHER
4352001	BW AMB1
4362001	BW SAR 1
4312001	BW SO 1
510101	JAIL
510102	AG BASE
510103	LN BASE

Individual Code ID Matrix



User Code: County/Local

0. Other
1. Sheriff
2. Police
3. Fire
4. Rural Fire
5. Amb/ Hospital
6. Misc.
7. Public Works County
8. Public Works City
9. Console

User Code: State

0. DOC
1. DOJ
2. MDT
3. FWP
4. DOA/GSA
5. DMA
6. Livestock
7. DNRC
8. Other
9. Console

User Code: Federal

0. Other
1. BLM
2. USFS
3. USFS LE
4. Border Patrol
5. Military
6. BIA Non Tribal Affiliated
7. Marshall/ AG Office
8. FBI
9. Console

User Code: BIA

1. Other
2. Law
3. Forestry
4. Fire
5. Game/Fish
6. EMS
7. Open
8. Public Works
9. Open
10. Console

5. IDENTIFY WHO EACH AGENCY NEEDS TO TALK TO

List each of the agencies who use radios in your jurisdiction. Include agencies from other counties as well as state and federal agencies. For each agency identify those agencies they will need to communicating with. Designate whether the communication is administrative only (A), emergency only (E), or both (B). Keep in mind that if you will be using a frequency other than one that is licensed to you, you must have the written permission of the other license holder.

County _____DEPT Key: A - Admin Basis Only E - Emergency Basis Only B - Both	911	County Sheriff	City Police	Hospital	Fire Dept	Public Works	Road Dept	BLM	USFS	Other County	EMS	Search & Rescue	DES (OES)	DNRC
County 911														
County Sheriff	B													
City Police	B	A												
Hospital	A	A	A											
Fire Dept	B	E	E											
Public Works	E	E	A	E										
Road Dept	E	E	E	E	E									
BLM	E	E	A	E	E									
USFS	E	E	E	E	E									
Other County	E	E	E	E	E	E								
EMS	B	E	E	E	E	E	E							
Search & Rescue	B	E	E	E	E	E	E	E						
DNRC	E	E	A	E	E	E	E	E	E					
DES	B	E	E	E	E	E	E	E	E					

6. DETERMINE AREA OF OPERATION BY DEPARTMENT / AGENCY

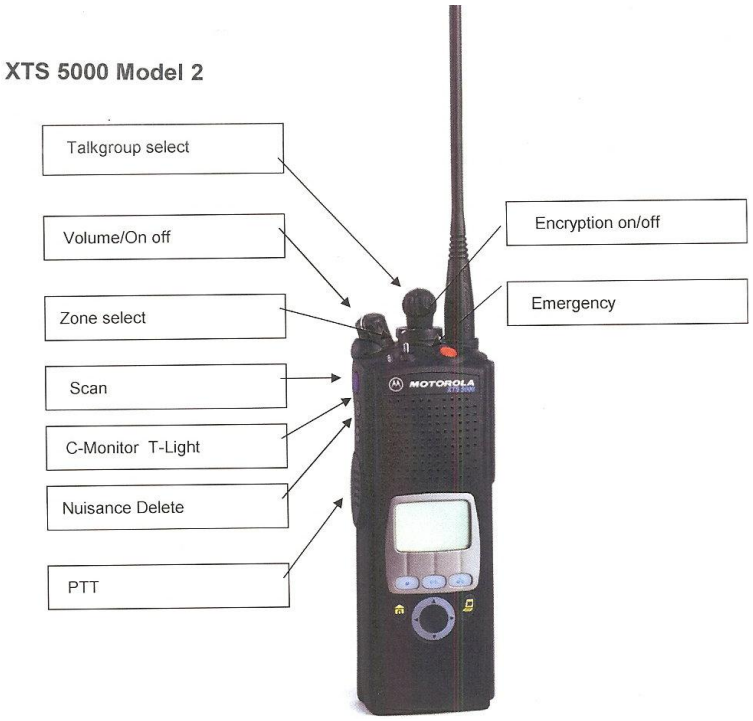
Determine the geographic areas (city, county, region, statewide) in which you will operate

Determine the primary site for the areas of operation

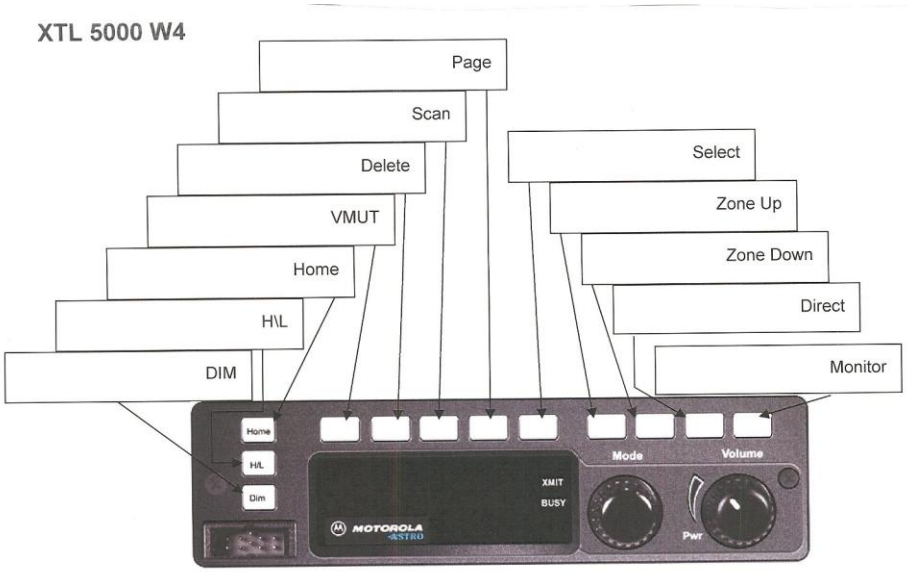
Determine what other areas you will need to operate in (roaming, transport)

7. DETERMINE BUTTON CONFIGURATION

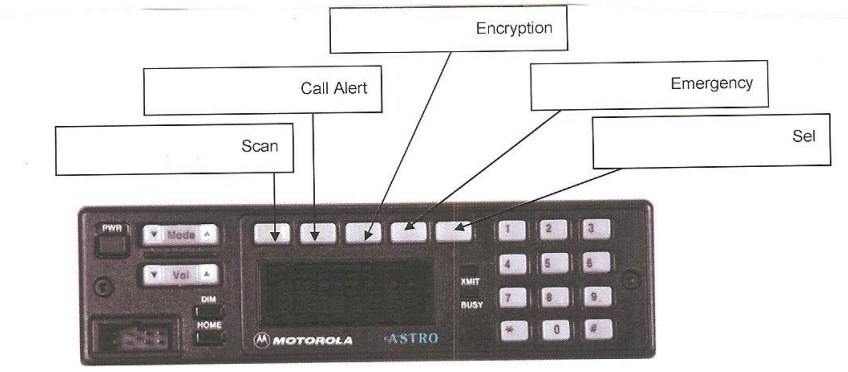
The buttons on the mobile and portable radios are capable of being configured. For instance, you may determine which button will be used to select the following features: scan, emergency, encryption, zone up, zone down, etc. Be sure buttons for all radios have standardized configuration. Examples follow.



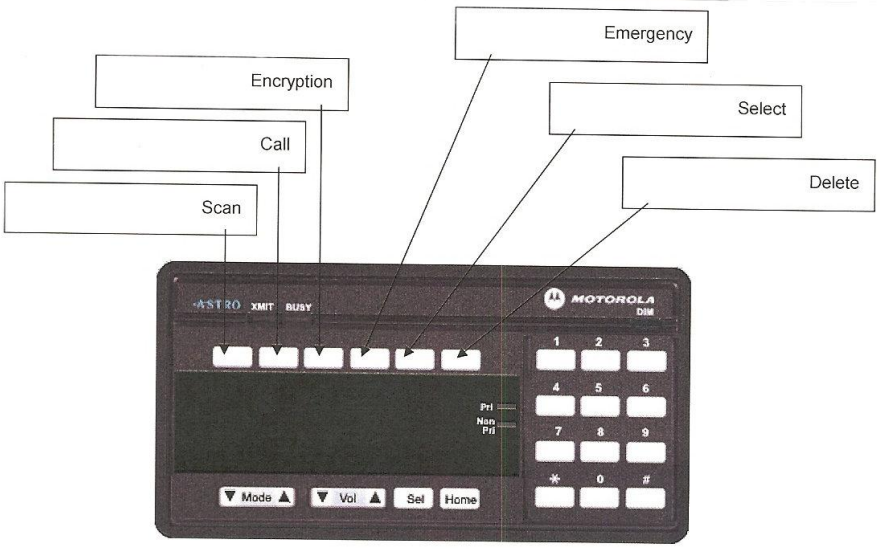
XTL 5000 W4



XTL 5000 W7



XTL 5000 W9


Emergency
Encryption
Select
Call
Delete
Scan
ASTRO
XMIT
BUSY
MOTOROLA
DIM
1
2
3
4
5
6
7
8
9
*
0
#
Pri
Non Pri
Mode
Vol
Sel
Home

8. DETERMINE SURVEILLANCE MODE

Surveillance mode is used for undercover work, and for such entities as SWAT teams and drug task forces. Identify those individuals whose radios will need to operate in surveillance mode.

User Name	Badge Number

Montana Trunking System Fleetmapping Worksheet

Form to be completed by Agency supervisor

County:
Agency:
Origination Date:
Updated:
Radio Model:
User Name:

User Display Alias:	
Time/Date Format	12H/24H
Maximum# modes:	850
One Line Display character count:	12
Trunked System ID: (HEX)	0016
Trunked Access TYpe:	Message + PTT-ID
Home WACN ID:	BEE00
Emergency Button enabled	
Silent/Audible Emergency:	
Emergency TG Steering:	Tactical (stays on current talkgroup)or Selected TG
System 1 or 2, Both	
ABC Switch:	Zone/Other Function
Radio Capability	Analog/ P25/Trunking
Encryption Allowed:	Y
Encryption Codes Used	MT PS,MT LE, MT FIRE,MT EMS,MT FIELD
Operator Select Trunking Scan (15 TG max):	Y
Operator Select Talkgroup Scan:	Y
Operator Select Conventional Scan (15 ch. Max):	Y
Zone C Confirmed:	Y
Power On/Off Zone Position:	Same/Revert
Home Mode:	1
Multigroup Call Initiate Capable?	N
Roaming Preferences by site:	(N=no pref.; P=pref.; A= always pref.; L= least pref.)
Quick Call II Tone Enabled? If yes, tones?	
Call Alert TG Requested?	
Surveillance Active/ID Zone Mode	
Button Assignment Chart Attached?	
Backlight Display Time:	15, 30, 45, 60 Seconds
On/Off Last Zone Activation:	
Last Mode per Zone Selected Enabled:	

Rotary Mode Selector SW. ▼	Zone A	Zone B	Zone C
Mode 1			
Mode 2			
Mode 3			
Mode 4			
Mode 5			
Mode 6			
Mode 7			
Mode 8			
Mode 9			
Mode 10			
Mode 11			
Mode 12			
Mode 13			
Mode 14			
Mode 15			
Mode 16			

Rotary Mode Selector SW. ▼	Zone D	Zone E	Zone F
Mode 1			
Mode 2			
Mode 3			
Mode 4			
Mode 5			
Mode 6			
Mode 7			
Mode 8			
Mode 9			
Mode 10			
Mode 11			
Mode 12			
Mode 13			
Mode 14			
Mode 15			
Mode 16			

Talkgroup System Prefix Identifier: ——→ 1-99_Name=County or Agency/Name, S=Statewide or Regional, F=Federal

Trunked Talkgroup HEX ID:		Radio Mode Name Description ▼	Mode Display Name ▼	ENC Y/N
00B5	80,000,181	Incident #4 (Interagency/Command)	S INC 4	
00B7	80,000,183	Incident #5 (Interagency/Command)	S INC 5	

Note: Frequencies paired are relective of the mobile/handheld configuration

Local Conv. Rptr. Freqs: (R/T)	Analog/P25 Conv. PL/DAC/Encryption Codes:	Agency:	Name:	Y/N

Statewide or Adjacent Co. Freqs.:	Analog/P25 Conv. PL/DAC/Encryption Codes:	Agency:	Name:	Y/N
153.800	C.S.	Statewide Tactical Mutual Aid: BLACK	BLACK	
155.475	C.S.	National Law Mutual Aid: BLUE	BLUE	
155.820	C.S.	Statewide EMS Mutual Aid 5: BROWN	BROWN	
154.265	C.S.	Statewide Fire Mutual Aid 2: CORAL	CORAL	
151.265	192.8 Hz	Dept. Nat. Resources (DNRC)	DNRC	
159.345	C.S.	Statewide Fire Mutual Aid 6: GARNET	GARNET	
153.905	C.S.	Statewide Fire Mutual Aid 7: GOLD	GOLD	
155.325	C.S.	Statewide EMS Mutual Aid 2: GRAY	GRAY	
171.475	3B: 131.8 Hz	US Forest Svc. (USFS common) GREEN	GREEN	
154.280	C.S.	Statewide Fire Mutual Aid 4: MAROON	MAROON	
151.400	C.S.	Dept. Nat. Resources (DNRC) ORANGE	ORANGE	
155.385	C.S.	Statewide EMS Mutual Aid 4: PINK	PINK	
155.220	C.S.	State Search & Rescue: PURPLE	PURPLE	
154.070	C.S.	Statewide Fire Mutual Aid 1: RED	RED	
153.830R 159.345T;	5A:156.7 Hz	Statewide Fire Mutual Aid RPTR: Ruby/Garnet	RUBGAR	
153.830	C.S.	Statewide Fire Mutual Aid 5: RUBY	RUBY	
154.295	C.S.	Statewide Fire Mutual Aid 3: SCARLET	SCARLET	
155.790	C.S.	Statewide Law Enf. Mutual Aid: SILVER	SILVER	
155.340	C.S.	Statewide EMS Mutual Aid 3: TAN	TAN	
155.160	C.S.	Search & Rescue: VIOLET	VIOLET	
155.280	C.S.	Statewide EMS Mutual Aid 1: WHITE	WHITE	
151.220	C.S.	Dept. Nat. Resources (DNRC) YELLOW	YELLOW	
168.725	C.S.	US Forest Svc. (USFS)	USF TA	
166.225	103.5	Helena National Forest Direct	HNF DIR	
170.600		Rocky Mountain Direct	RKYMTA	